

Docket No. 0557-4630-3

IN RE APPLICATION OF: MASAMICHI YAMADA

SERIAL NO: 09/277,222

FILED: MARCH 26, 1999

FOR: FIXING DEVICE USING A BELT FOR AN IMAGE FORMING APPARATUS



ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Transmitted herewith is an amendment in the above-identified application.

- ☒ No additional fee is required
- ☐ Small entity status of this application under 37 C.F.R. §1.9 and §1.27 has been established by a verified statement previously submitted.
- ☐ Small entity status of this application under 37 C.F.R. §1.9 and §1.27 has been established by a verified statement submitted herewith.
- ☒ Additional documents filed herewith: Letter Requesting Approval of Drawing Changes

The Fee has been calculated as shown below:

CLAIMS	CLAIMS REMAINING		HIGHEST NUMBER PREVIOUSLY PAID	NO. EXTRA CLAIMS	RATE	CALCULATIONS
TOTAL	33	MINUS	33	0	× \$18 =	\$0.00
INDEPENDENT	1	MINUS	3	0	× \$78 =	\$0.00
		<input type="checkbox"/> MULTIPLE DEPENDENT CLAIMS			+ \$260 =	\$0.00
		TOTAL OF ABOVE CALCULATIONS				\$0.00
		<input type="checkbox"/> Reduction by 50% for filing by Small Entity				\$0.00
		<input type="checkbox"/> Recordation of Assignment			+ \$40 =	\$0.00
		TOTAL				\$0.00

- ☐ A check in the amount of _____ is attached.
- ☒ Please charge any additional Fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.
- ☒ If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time may be charged to Deposit Account No. 15-0030. A duplicate copy of this sheet is enclosed.

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TC 2800 MAIL ROOM

0557-4630-3

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

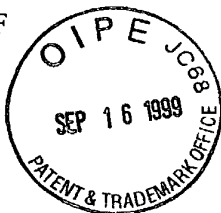
IN RE APPLICATION OF

MASAMICHI YAMADA

SERIAL NO: 09/277,222

FILED: MARCH 26, 1999

FOR: FIXING DEVICE USING A
BELT FOR AN IMAGE
FORMING APPARATUS



EXAMINER: CHEN, S.

GROUP ART UNIT: 2852

Amdt

8/A

9-22-99

T. Flowers

AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

In response to the Office Action of July 23, 1999, please amend the above-identified patent application as follows:

IN THE SPECIFICATION

Please amend the specification as follows:

Page 11, line 6, change "shape r" to --r-shape--.

Page 12, line 24, change "with" to --width--.

Page 16, line 13, change "shape r" to --r-shape--;

line 16, change "shape r" to --r-shape--;

line 20, change "shape r" to --r-shape--.

Page 17, line 12, change "shape r" to --r-shape--.

Page 18, line 3, change "shape r" to --r-shape--.

Page 19, line 12, change "28b" to --18b--.

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Page 20, line 22, after "14" insert --and--.

IN THE CLAIMS

Please amend the claims as follow:

~~3~~ (Amended) A fixing device as claimed in claim ~~8~~¹², wherein said press roller has a

A1 surface layer formed of an elastic material and less than 2 mm thick inclusive and having a

hardness of higher than 40° inclusive [in accordance with JISA].

~~11~~ (Amended) A fixing device as claimed in claim ~~12~~¹⁰, wherein said press roller has a

A2 surface layer formed of an elastic material and less than 2 mm thick inclusive and having a

hardness of higher than 40° inclusive [in accordance with JISA].

B ~~16~~ (Amended) A fixing device as claimed in claim [17] ~~10~~¹, wherein said sponge-like

heat insulating material has a hardness of less than 30° inclusive in terms of Ascar hardness.

A3 ~~19~~ (Amended) A fixing device as claimed in claim ~~18~~¹¹, wherein said press roller has a

surface layer formed of an elastic material and less than 2 mm thick inclusive and having a

hardness of higher than 40° inclusive [in accordance with JISA].

~~21~~ (Amended) A fixing device as claimed in claim 1, wherein said press roller has a

A4 surface layer formed of an elastic material and less than 2 mm thick inclusive and having a

hardness of higher than 40° inclusive [in accordance with JISA].

~~25~~ (Amended) A fixing device as claimed in claim 1, wherein [said] a surface layer of

A5 said press roller is covered with a material having a high parting ability.--

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-33 are presently active in this application. The present amendment amends Claims 6, 13, 18, 19, 23, and 27.

On page 2 of the outstanding Office Action, the drawings were objected to. In response to the informalities noted at numbered paragraph 2, Applicant has changed "shape r" to "r-shaped" through out the specification and has added reference signs "N" and "39" to the drawings, as indicated in the Letter to the Draftsperson submitted herewith. In response to numbered paragraph 3, Applicant has deleted reference signs "132" and "41" from the figures, as indicated in the Letter to the Draftsperson submitted herewith. In response to numbered paragraph 4, Applicant submits that the surface layer of the belt 15 is also clearly shown in Figure 4, for example, and the surface layer of the press roller 14 is also clearly shown in Figure 4, for example. Thus, Applicant respectfully requests that the objection under 37 C.F.R. §1.83(a) be withdrawn. Alternatively, the Examiner is invited to telephone the undersigned to discuss the possibility of adding a new figure that more clearly shows the surface layers of the belt and the press roller.

The specification was objected to for containing minor informalities. Accordingly, Applicant has corrected the minor informalities noted by the Examiner.

In the outstanding Office Action, Claims 6-9, 13-16, and 18-29 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention; Claims 1, 2, 17, 30, and 32 were rejected under 35 U.S.C. §102(e) as being anticipated by Moser; Claim 23 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moser in view of Hayashi et al; Claims 24 and 25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moser in view of Hayashi et al and further in view of Ohtsuka et al; Claim 26 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moser in view of Hayashi et al in view of Ohtsuka

et al and further in view of Yamamoto et al; Claims 27 and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable Moser in view of Ohtsuka et al; Claim 29 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moser in view of Ohtsuka et al and further in view of Yamamoto et al; Claim 31 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moser in view of Yamamoto et al; Claim 33 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moser in view of Yamamoto et al; Claims 3-5 and 10-12 were objected to as being dependent upon a rejected base claim, but indicated as allowable if rewritten in independent form; and Claims 6-9, 13-16, and 18-22 were indicated as allowable if rewritten in independent form and to overcome the rejections under 35 U.S.C. §112, second paragraph.

With regard to the rejection of Claims 6-9, 13-16, and 18-29 under 35 U.S.C. §112, second paragraph, Applicant has amended the claims to eliminate the language found objectionable by the Examiner. Accordingly, the rejection under 35 U.S.C. §112, second paragraph, is believed to have been overcome.

Turning now to the rejections of the claims on the merits, Applicant acknowledges with appreciation the indication that Claims 3-5 and 10-12 would be allowable if rewritten in independent form. Applicant also acknowledges gratefully the indication that Claims 6-9, 13-16, and 18-22 would be allowable if rewritten in independent form and to overcome the rejections under 35 U.S.C. §112, second paragraph. However, since Applicant believes himself entitled to the scope of protection stated in independent Claim 1, Claims 3-16 and 18-22 have presently been maintained in dependent form.

Before discussing the several grounds for rejection on the merits, it is believed that a brief review of the present invention is in order. Claim 1 defines a fixing device for fixing a toner image formed on a recording medium. The fixing device includes a heat source for

applying heat to a toner image carried on a recording medium conveyed via a nip where a belt and a press roller are pressed against each other. An important feature of Claim 1 is that the nip has a width greater than 25° inclusive in terms of a circumferential angle as seen from an axis of a fix roller. This feature causes a belt of the fixing device to form a small round shape at a position just downstream of the nip.¹ This rounded portion of the belt prevents a recording medium from wrapping around the belt, broadens the parting temperature range for fixation, and obviates toner offset. Additionally, the fixing device requires only a small amount of parting agent, which makes the fixing device easier to maintain.²

Attention is now directed to the Moser reference. Moser discloses an externally heated nip forming fuser roll. In one embodiment, Moser describes a deformable belt 12 shown in Figure 1. In a second embodiment, Moser describes a deformable layer 52 on a fixing roll. However, Moser's specification clearly indicates that the "thickness of the belt 12 is on the order of 0.006 to 0.125 inch[es],"³ and that the thickness of the deformable layer 52 has a thickness "in the order of 0.006 to [0.125] inch[es]."⁴ The specification also indicates that the combined thickness of the deformable layer 52 and the deformable belt must be in the range of 0.006 to 0.125 inches.⁵ Accordingly, it can be appreciated that the nip formed between the deformable layer 52 and the fusing belt 54 could not possibly have a width greater than 25° inclusive in terms of a circumferential angle as seen from an axis of the fix roller. For

¹See specification, page 16, lines 13-16.

²See page 21, line 19, to page 22, line 3.

³Column 5, line 5.

⁴Column 5, lines 33-48. Note that column 5, line 47 erroneously omits the upper range of the thickness of the deformable layer 52. The upper range of 0.125 inches is obtained from Claims 5 and 11 and from column 5, line 5.

⁵See column 5, lines 47-48.

the nip to form an angle of 25° or greater, the press roller of Moser would have to be extremely large and/or the fixing roller would have to be extremely small. This is because the maximum combined thickness of the deformable layer 52 and the fusing belt 54 cannot exceed 0.125 inches. Therefore, these layers could not be displaced more than 0.125 inches, and thus, the nip formed between those layers would be quite small. Thus, Applicant submits that the size of the nip shown in Figures 1-3 is grossly exaggerated for purposes of making the nip easier to discern.

When an unintended feature of a drawing is used as prior art, the drawings must be evaluated for what they reasonably disclose and suggest to one of ordinary skill in the art.⁶ However, proportions of features in a drawing are not evidence of actual proportions when drawings are not to scale.⁷ The description of the article pictured can be relied on, in combination with the drawings, for what they would reasonably teach one of ordinary skill in the art.⁸ In this case, Moser expressly limits the combined thickness of the deformable layer and the fusing belt to 0.125 inches. Thus, one having ordinary skill in the art would immediately recognize that the nip shown in Figures 1-3 is not drawn to scale and that the angle formed by the nip is much smaller than 25°. Therefore, Applicant does not believe that the Moser reference anticipates or makes obvious the invention of Claim 1, which defines a nip having a width greater than 25° inclusive in terms of a circumferential angle as seen from an axis of a fix roller.

The references to Hayashi et al, Ohtsuka et al, and Yamamoto et al disclose various press roller and belts, however, none of those references are believed to teach or suggest a nip

⁶See MPEP §2125.

⁷See MPEP §2125.

⁸See In Re Wright, 193 USPQ 332 (CCPA 1977).

having a width greater than 25° inclusive in terms of a circumferential angle as seen from an axis of a fix roller. This feature is defined by Claim 1, and thus, Hayashi et al, Ohtsuka et al, and Yamamoto et al, when considered alone or in any proper combination with each other and/or Moser, are not believed to anticipate or make obvious the invention of Claim 1.

Therefore, it is respectfully submitted that Claim 1 is patentably distinguishable over the applied references. Since Claims 2-33 depend directly or indirectly from Claim 1, it is also submitted that Claims 2-33 are patentably distinguishable over the applied references for at least the same reasons as Claim 1.

In view of the foregoing discussion, no further issues are believed to be outstanding in the present application. Therefore, Applicant respectfully request that this application be allowed and be passed to issue.

Respectfully submitted,

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